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Fats and Oils Situation.

Economics, Statistics,
and Cooperatives Service

FOS-295

U.S. Department of
Agriculture

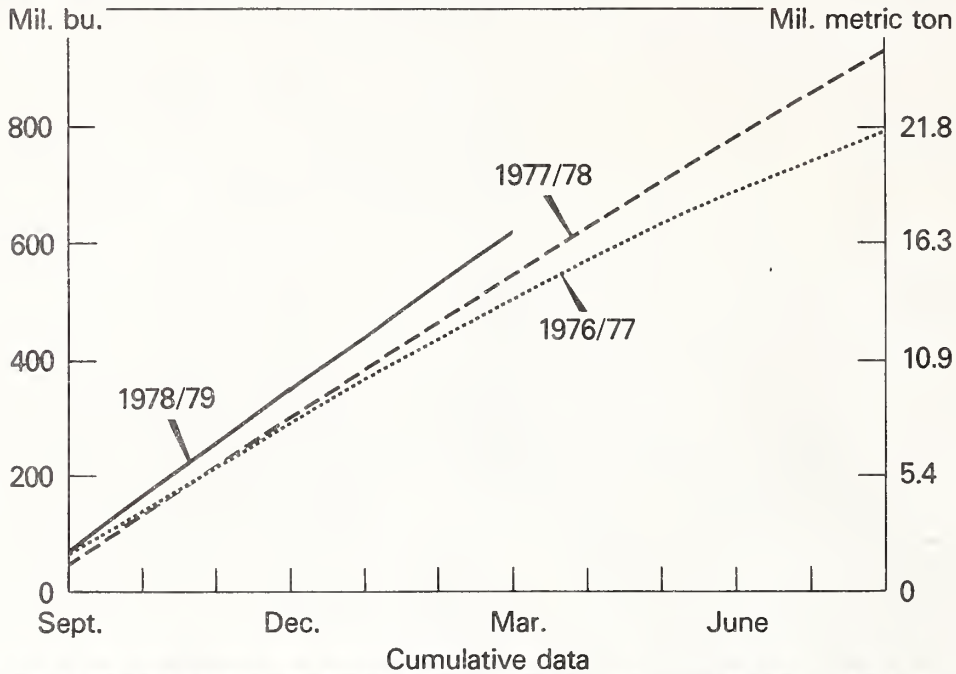
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Approved by the
World Food and
Agricultural Outlook
and Situation Board

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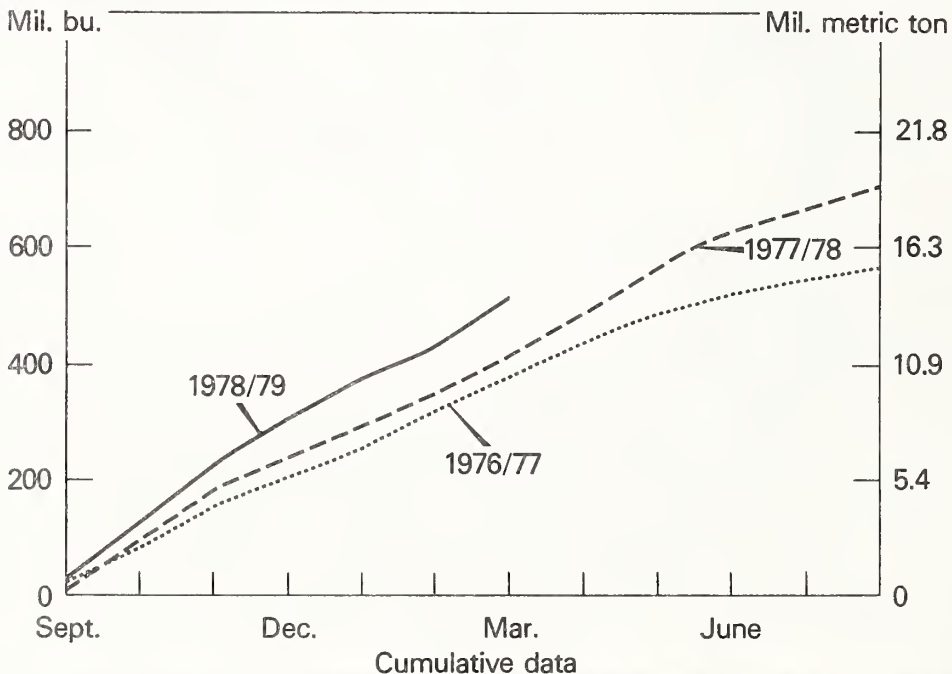
Monthly U.S. Soybean Crushings



USDA

Neq. ESCS 17-79 (4)

Monthly U.S. Soybean Exports



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SUMMARY

The 1979 U.S. soybean crop is likely to set another record, in view of prospects for a sharp increase in plantings. However, given the uncertainties about actual plantings and yields this early in the season, a range of 1.8 to 2.1 billion bushels has been projected, compared with 1978 output of 1.84 billion bushels.

World demand for oilseeds is expected to remain strong, signaling a favorable price outlook for producers in 1979/80, despite the big U.S. soybean acreage increases planned for soybeans and a few other oilseed crops. The average farm price for soybeans could range from about \$6 a bushel to near \$9, although it may end up around this season's \$6.75 if supplies and use are about in balance as anticipated.

Much depends on how closely farmers stick to their planting intentions. In early April, farmers reported plans to seed 68.8 million acres to soybeans this spring, some 7 percent more than

last year. Favorable soybean prices relative to corn and cotton have encouraged farmers to expand soybean acreage. The price situation also provides a strong incentive for more double-cropping of soybeans after the wheat harvest in some areas.

Planting weather will be another big factor. Should corn plantings be delayed this spring because of wet weather, soybean acreage could turn out even higher than indicated by the April planting intentions, since soybeans can be planted later in the spring than corn.

For the current marketing year, the focus is still on the strong demand and price situation. Record-large exports of soybeans and products, along with new highs in domestic use of high-protein meals and vegetable oils, are propelling soybean disappearance sharply upward this season. Total soybean use in 1978/79 is forecast at 1.89 billion bushels, up a tenth from 1977/78 and somewhat in excess of production. Carryover stocks next

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September 1 are now estimated at around 140 million bushels, compared with 161 million bushels on September 1, 1978.

Prices received by farmers for soybeans advanced steadily from \$6.19 per bushel last September to about \$7 in February and have since fluctuated around that level. The September-April 1978/79 average was \$6.60 per bushel, nearly \$1 above a year earlier. Soybean prices are expected to remain around \$7 through late summer but may then moderate some if U.S. farmers follow through on intentions to plant more soybeans and if South American marketings are heavy during the summer.

Total U.S. soybean stocks, as of April 1, were 871 million bushels, compared with 849 million bushels a year ago. Nearly half of the April 1 stocks were on the farm. Soybean crushings and exports during April-August 1979 are expected to drop sharply from September-March rates. For all of 1978/79, soybean crushings are estimated at around 1.0 billion bushels (up 9 percent from 1977/78) and soybeans exports at around 800 million bushels (up 14 percent).

In sunflowers, the big news is prospective plantings. April 1 intentions for the four major producing States surveyed point to a 75-percent increase in sunflowerseed acreage this year to 4.9 million acres.

U.S. sunflowerseed crushings this season are running at record levels as food processors use increasing amounts in cooking oil and margarine.

The bulk of U.S. sunflowerseed production is still exported, with volume this season estimated at 1.3 million tons of seed or about two-thirds of the total supply of 1.9 million tons.

U.S. wholesale prices of fats and oils have risen since last fall, due to the strong demand for, and reduced availabilities of, some items. Soybean oil, the major U.S. edible oil, advanced from about 25

cents per pound last November at Decatur to 28 cents in March, but then declined in April.

Inedible tallow, the major animal fat, increased more sharply—from 21 cents per pound (bleachable fancy, Chicago) last fall to 26 cents in April. Record high tallow prices reflect a small change in output coupled with rising demand. Also, higher prices for competitive petrochemicals are impacting on tallow prices. Soybean oil usually sells at a premium of several cents over inedible tallow, but now both prices are nearly equal. Prices for fats and oils likely will continue at relatively high levels throughout 1979.

Soybean meal prices (44 percent protein) have also moved up this marketing year—from \$164 per short ton last fall to \$195 in March—but they declined slightly in April. Higher animal numbers and profitable feeding ratios have boosted consumption to record highs.

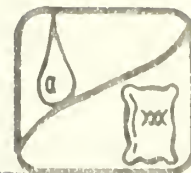
World production of high-protein meals in 1978/79 is well above trend, increasing 6 percent to over 83 million metric tons (soybean meal equivalent) in spite of the drought-reduced 1979 Brazilian soybean crop. World demand for protein meal continues strong. Soybean meal prices in Europe and Japan are attractive relative to grain prices. European Community imports of manioc—an inexpensive low-protein feed—continue large, but use is not expected to rise further this year. World use of protein meal this year is expected to increase, but at a slower rate than last year.

World production of oilseeds, fats, and oils is estimated at about 55 million metric tons (oil basis), up 4 percent from the record 1977/78 level. Supplies of both meals and oils are adequate to meet world demands with little change in carryover stocks.

The world outlook for 1979/80 is for further gains in oilseed production and increased supplies of vegetable oils and protein meals, about balanced by continuing strong demand.

* * * * *

FATS AND OILS SITUATION



SITUATION AND OUTLOOK

Soybean Acreage To Increase 7 Percent or More

Acreage of the five major U.S. oilseed crops in 1979 will total a record 90.5 million acres, compared with 83 million acres last year, according to the April *Prospective Plantings* report.

Soybean growers indicated that they intended to plant 68.8 million acres, up 4.8 million from 1978. Increases were planned in all the major producing regions, largely reflecting the favorable price situation. Prices received for soybeans have risen faster than prices for feed grains, wheat, and cotton.

For soybeans and corn—two crops which can be substituted for one another in many areas—the price ratio in late April, at 2.8 to 1, clearly favored soybeans. The new crop price ratio (November 1979 soybeans versus December corn) in late April was about 2.6 to 1. A soybean/corn price ratio of $2\frac{1}{2}$ to 1 is generally considered the breakeven point. Not surprisingly, while planting intentions were up for soybeans, they were down 1 percent from last year for corn.

Spring planting weather will have a bearing on how closely farmers hold to their acreage intentions, as well as the extent to which they double-crop soybeans after wheat. Soybeans can be planted later than corn, so a wet spring that delayed planting would tend to favor soybeans. At the same time, prospects for increased wheat and favorable soybean prices provide the incentive to plant soybeans after the wheat harvest. Last year, about 5 percent of the soybean acreage was double-cropped, whereas in 1976 some 10 percent of the area, or 5 million acres, was planted after harvest of another crop.

Prospective *cotton* acreage, at 14.4 million acres, is up from the 13.4 million last year. Reduced cotton production in 1978 and relatively favorable prices to growers are the principal reasons for the planned expansion in 1979.

Sunflowerseed planting intentions in the four survey States (North Dakota, South Dakota, Minnesota, and Texas) indicated that 4.9 million acres will be seeded in 1979, about 75 percent more than last year. Prices to growers have increased in recent years, making sunflowers an attractive cash crop in the Red River Valley area.

Flaxseed acreage intentions for 1979 reveal a prospective cut to 0.8 million acres, some 6 percent below last year. Declining demand for flaxseed and products, along with increased competition for land from sunflowerseeds, has reduced acreage.

Peanut growers intend to plant 1.5 million acres, not much change from 1978. Peanut plantings are under acreage controls and the national allotment has been held at the legal minimum of 1.6 million acres each year since 1956.

SOYBEANS

Record Demand; Strong Prices

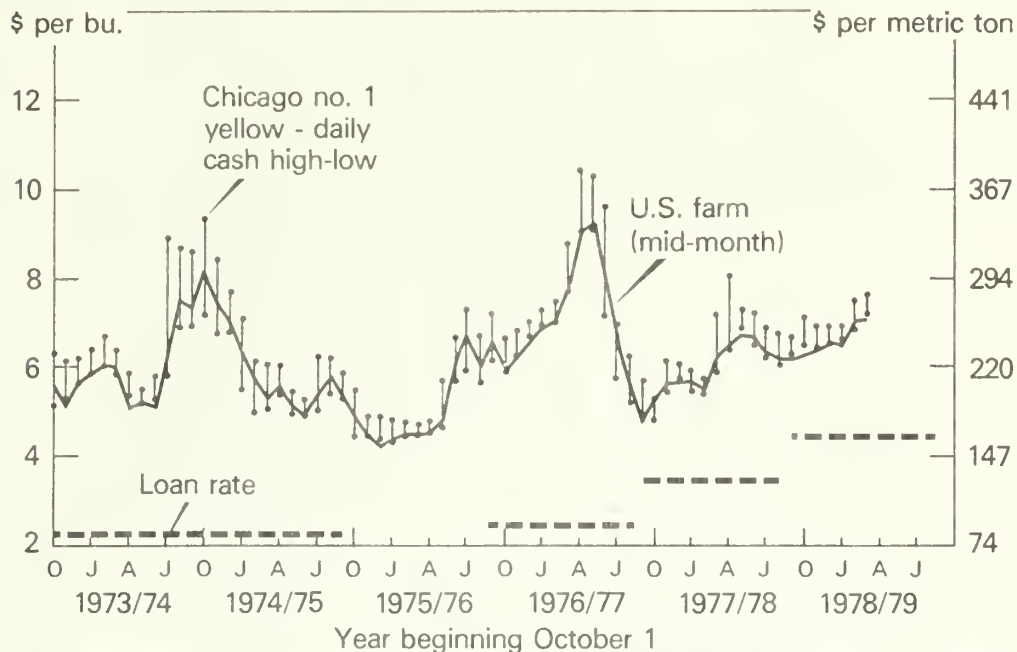
U.S. soybean use this marketing year continues at a record pace which cannot be sustained. The heavy use likely will result in carryover stocks next September 1 of around 140 million bushels, down from the 161 million on hand last September. This relatively low carryover represents only about 7 percent of the total soybean use in 1978/79 and is equal to less than 1 month's average requirement.

Farm prices for soybeans have advanced from \$6.19 per bushel last September to over \$7 in recent months, compared with \$6.50 in April 1978. Soybean prices during the remainder of the marketing year probably will average around \$7 per bushel, up about 8 percent from the April-August 1978 average.

Crushings are estimated at 1.0 billion bushels, up 9 percent from the 927 million bushels processed in 1977/78. The crush rate should continue heavy this spring but may show sharper than normal declines during the summer, as soybean supplies tighten. Record domestic demand for soybean meal and oil, along with relatively favorable processing margins, is stimulating the record-high crush.

U.S. soybean exports are now forecast at around 800 million bushels, about 100 million bushels or 14 percent more than in 1977/78. The United States has been virtually the only major world supplier of soybeans this marketing year at a time when world demand for soybean meal and oil is expanding. Western Europe, Japan, Taiwan, and the USSR are the major importers of U.S. soybeans.

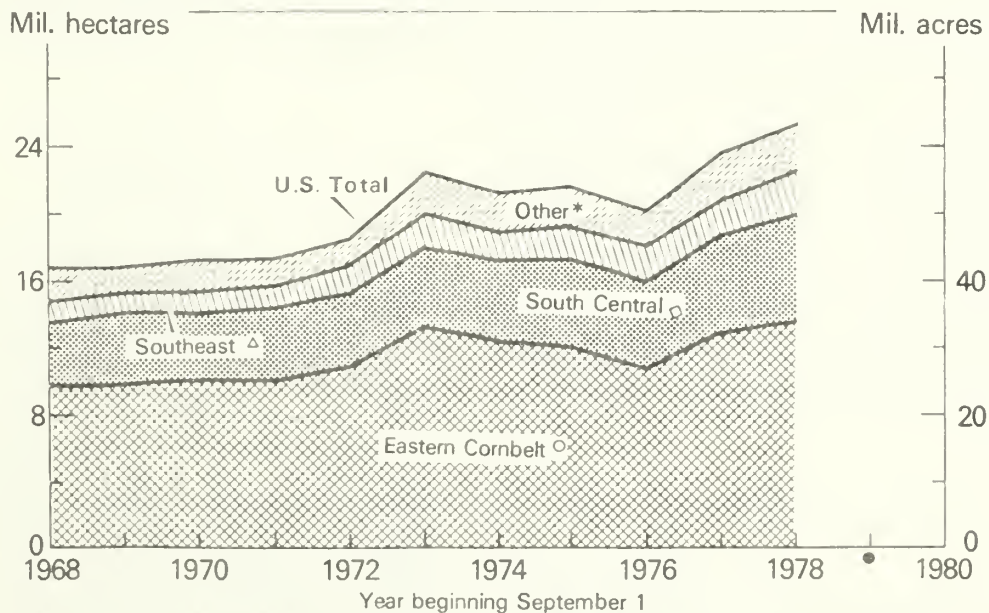
U.S. Soybean Prices



USDA

Neg. ESCS 2511-79 (4)

U.S. Soybean Acreage Planted



○ Illinois, Indiana, Iowa, Missouri, Minnesota and Ohio. □ Arkansas, Louisiana, Mississippi, Kentucky and Tennessee. △ North Carolina, South Carolina, Georgia and Alabama * Western cornbelt states and all other. ● Based on January 1 planting intentions.

USDA

Neg. ESCS 5821-79 (2)

TABLE 2.—SOYBEANS: PROSPECTIVE PLANTINGS FOR 1979 WITH COMPARISONS, BY STATES AND AREAS, CROP YEARS 1976-79

STATE AND AREA	ACREAGE PLANTED				ACREAGE HARVESTED				PRODUCTION			
	ACTUAL											
	1976	1977	1978 1/	1979 2/	1976	1977	1978 1/	1979	1976	1977	1978 1/	1979
	1,000 ACRES								MILLION BUSHELS			
NORTH CAROLINA	1,220	1,450	1,620	1,750	1,120	1,320	1,550		24.6	29.0	37.2	
SOUTH CAROLINA	1,230	1,350	1,510	1,680	1,190	1,300	1,470		21.4	26.7	32.3	
GEORGIA	890	1,250	1,750	1,900	870	1,090	1,680		20.4	21.8	29.4	
ALABAMA	1,200	1,650	2,000	2,400	1,170	1,600	1,950		28.1	33.6	42.9	
TOTAL SOUTHEAST	4,450	5,700	6,880	7,730	4,350	5,310	6,650		94.5	111.1	141.8	
KENTUCKY	1,100	1,350	1,450	1,630	1,070	1,320	1,410		28.9	40.9	42.3	
TENNESSEE	1,920	2,320	2,530	2,900	1,800	2,220	2,420		40.5	52.2	56.9	
MISSISSIPPI	3,335	3,750	3,900	4,100	3,250	3,650	3,800		71.5	78.5	81.7	
ARKANSAS	4,360	4,650	4,750	4,750	4,320	4,600	4,700		82.1	105.8	112.8	
LOUISIANA	2,280	2,750	2,900	3,100	2,250	2,680	2,840		63.0	63.0	71.0	
TOTAL SOUTH CENTRAL	12,995	14,820	15,530	16,480	12,690	14,470	15,170		286.0	340.4	364.7	
OHIO	2,900	3,400	3,780	3,900	2,880	3,380	3,750		95.0	120.0	123.8	
INDIANA	3,300	3,930	4,150	4,400	3,280	3,900	4,130		111.5	144.3	140.4	
ILLINOIS	7,600	8,900	9,250	9,550	7,560	8,850	9,190		249.5	336.3	303.3	
IOWA	6,470	7,100	7,600	8,050	6,450	7,080	7,550		200.0	251.3	286.9	
MISSOURI	4,300	4,730	5,500	5,600	4,200	4,650	5,440		84.0	148.8	155.0	
MINNESOTA	3,050	3,800	4,100	4,850	3,020	3,770	4,060		66.4	133.8	142.1	
TOTAL EASTERN CORN BELT	27,620	31,860	34,380	36,350	27,390	31,630	34,120		806.4	1,134.5	1,151.5	
NORTH DAKOTA	150	180	175	220	147	175	173		1.8	3.5	4.8	
SOUTH DAKOTA	280	320	400	520	271	345	390		4.6	9.6	11.9	
NEBRASKA	995	1,150	1,270	1,450	980	1,130	1,250		19.6	40.7	42.5	
KANSAS	900	1,020	1,480	1,450	865	990	1,450		13.0	28.2	26.1	
TOTAL WESTERN CORN BELT	2,325	2,670	3,325	3,640	2,263	2,610	3,263		39.0	82.0	85.3	
ALL OTHERS 3/	2,836	3,710	3,929	4,601	2,665	3,592	3,800		61.7	93.8	99.3	
UNITED STATES	50,226	58,760	64,044	68,801	49,358	57,612	63,003		1,287.6	1,761.8	1,842.6	

1/ PRELIMINARY

2/ APRIL 1 INDICATIONS.

3/ NEW YORK, NEW JERSEY, PENNSYLVANIA, MICHIGAN, WISCONSIN, DELAWARE, MARYLAND, VIRGINIA, FLORIDA, OKLAHOMA, AND TEXAS

TABLE 3.—SOYBEANS: STOCKS ON FARM, OFF FARM AND TOTAL IN ALL POSITIONS, JANUARY 1, APRIL 1, JUNE 1, AND SEPT. 1, 1970-79

YEAR	JANUARY 1			APRIL 1			JUNE 1 1/			SEPTEMBER 1		
	ON FARM	OFF FARM	TOTAL	ON FARM	OFF FARM	TOTAL	ON FARM	OFF FARM	TOTAL	ON FARM	OFF FARM	TOTAL
	MILLION BUSHELS											
1976	372.1	683.4	1055.5	209.2	525.0	734.2	78.7	324.7	403.4	40.6	189.3	229.8
1971	392.0	553.0	945.0	246.5	369.1	615.6	90.6	190.8	281.4	20.6	78.2	98.8
1972	397.6	491.4	889.0	218.6	333.7	552.3	58.4	174.4	232.8	11.8	60.2	72.0
1973	428.8	437.9	866.7	145.3	358.4	503.6	33.8	145.4	179.2	9.4	59.2	68.6
1974	677.2	552.8	1160.0	331.2	485.9	737.2	150.7	190.9	341.6	64.4	106.3	170.8
1975	485.0	505.4	990.4	332.1	323.3	655.4	165.6	191.7	357.3	78.2	109.9	188.2
1976	590.5	665.7	1256.2	411.4	456.3	867.6	254.0	300.9	554.9	86.1	158.8	244.9
1977	473.1	559.0	1032.2	227.7	390.2	617.9	92.4	243.3	335.7	32.7	70.2	102.9
1978	672.9	652.4	1325.3	393.7	455.4	849.1	207.1	298.8	505.9	59.0	102.0	161.0
1979	689.9	692.5	1382.4	403.9	467.6	871.5						

1/ ESCS ESTIMATES 1960-75. DERIVED FROM JULY 1 STOCKS BY ADDING JUNE CRUSHINGS AND EXPORTS.

New Crop Prospect Range from 1.8 to 2.1 Billion Bushels

If farmers do not alter their April plans for the 1979 crop, U.S. planted acreage to soybeans this year, projected at 68.8 million acres, will be nearly 4 percent higher than farmers indicated on January 1 and 7 percent above 1978 plantings. The actual supply would then depend on weather's effect on yields.

Based on current prospects, the 1979/80 soybean supply would be up moderately from 1978/79. Crushings and exports would be expected to increase further, although not as much as in 1978/79. This would boost total use to about equal production, leaving carryover stocks on September 1, 1980 again at relatively low levels. Farm prices probably would average near the \$6.75 per bushel now estimated for the 1978 crop season.

If growing conditions are particularly favorable, 1979/80 soybean supplies would total around 2.2 billion bushels, an increase of a tenth from this year. Crush would rise sharply, but exports would show little gain due to good crops throughout the world. Thus, U.S. carryover would rise to around 250 million bushels, and prices would drop to about \$6 per bushel.

Unfavorable weather would reduce U.S. supplies below 2 billion bushels, about 3 percent less than in 1978/79. Tight supplies and higher prices (approaching \$9) would reduce domestic crushings, but exports would likely be increased because of poor competing crops worldwide. Total use would be limited to about 1.8 billion bushels, leaving carryover stocks at a very tight 120 million bushels.

SOYBEAN OIL

Domestic Use Up; Exports Increase

Soybean oil supplies in 1978/79 are estimated at nearly 12 billion pounds, compared with 11 billion last season. Domestic use is expected to rise to around 8.7 billion pounds, or some 5 percent above 1977/78. U.S. supplies of competitive cottonseed oil, imported palm oil, and butter are smaller this marketing year, but there are greater quantities of sunflowerseed oil and corn oil. Domestic disappearance of soybean oil during October-February, at 3.7 billion pounds, was up about 4 percent.

Soybean oil, the major vegetable oil produced and consumed in the United States, now represents over 60 percent of all food fats and oils consumed.

Soybean oil exports this marketing year are projected at 2.2 billion pounds, up about 5 percent from 1977/78. Exports during October-February, at 1 billion pounds, were up some 30 percent from the

previous year. India, Pakistan, Iran, China, Colombia, and Peru are the major markets.

Soybean oil prices (crude, Decatur) have advanced from about 25 cents per pound last November to 28 cents in March, but declined slightly in April. Prices during May-September may average near last year's level of 27 cents. U.S. processors are crushing soybeans to meet soybean meal demand, and this is expected to build the soybean oil inventory to 0.9 to 1.0 billion pounds by next October 1, up over a fourth from beginning-year stocks.

SOYBEAN MEAL

Feed Use Spurs Demand

U.S. soybean meal supplies for 1978/79 are estimated at over 24 million short tons, compared with 22½ million last season. Domestic use is placed at 17½ million tons, or some 8 percent above 1977/78. The increases in sows farrowing (up 17 percent from a year ago), broiler production (up 9 percent), and cattle on feed all point to heavier consumption of high-protein feeds this marketing year. Domestic disappearance during October-February totaled 7.8 million tons, compared with 7.2 million tons for the same period in 1977/78.

Feed use of corn and other grains is expected to increase some 10 percent this marketing year, which also will stimulate the demand for soybean meal. Livestock and poultry feed price ratios continue favorable for heavy feeding per animal.

Soybean meal exports are expected to rise somewhat this season from the 6.1 million tons shipped in 1977/78. Exports during October-February totaled 2.9 million tons, compared with 2.4 million a year earlier. Over half of our meal exports go to Western Europe, with Eastern Europe and Japan also ranking as large markets.

The bulk of U.S. soybean meal moves abroad in the form of soybeans rather than the processed commodity. Many countries prefer to process the soybeans themselves. A large part of the export movement for already-processed beans is met by Brazil which moves large quantities of soybean meal into world markets.

WORLD OILSEEDS

Output Above Trend

World production of high-protein meals in 1978/79 is expected to be above trend again, increasing 6 percent to over 83 million tons (soybean meal equivalent) in spite of the drought-reduced 1979 Brazilian soybean crop.

Table 4.-- SOYBEANS AND PRODUCTS (Domestic Measure) 1/

Commodity	: 1977/78	: 1978/79	:	1979/80
	: Prelim.	: Estimated	:	Projected 2/

	:		Alt. I	Alt. II
SOYBEANS:	:			
Area	:	Million acres		
Planted	: 58.8	64.0		
Harvested	: 57.6	63.0		
Yield per harv.	:	Bushels/acre		
unit	: 30.6	29.2		
	:	Million bushels		
Beginning stocks	: 103	161	140	140
Production	: 1,762	1,843	2,070	1,800
Supply, total	: 1,865	2,004	2,210	1,940
Crushings	: 927	1,010	1,060	900
Exports	: 700	800	815	835
Seed and feed	: 69	75	75	75
Residual	: 8	4	10	10
Use, total	: 1,704	1,889	1,960	1,820
Imbalance	: ---	25 3/	---	---
Ending stocks	: 161	140	250	120
Avg. farm price	: 5.88	6.75	5.75-6.25	8-10
SOYBEAN OIL:	:	Million pounds		
Beginning stocks	: 771	729	940	940
Production	: 10,288	11,061	11,555	9,810
Supply, total	: 11,059	11,790	12,495	10,750
Domestic	: 8,273	8,700	9,100	8,400
Exports	: 2,057	2,150	1,900	1,700
Use, total	: 10,330	10,850	11,000	10,100
Ending stocks	: 729	940	1,495	650
Avg. price 4/	: 24.6	27	18-20	30-34
SOYBEAN MEAL:	:	Thousand short tons		
Beginning stocks	: 228	243	380	380
Production	: 22,371	23,987	25,175	21,375
Supply, total	: 22,599	24,230	25,555	21,755
Domestic	: 16,276	17,500	18,500	16,500
Exports	: 6,080	6,350	6,600	5,050
Use, total	: 22,356	23,850	25,100	21,550
Ending stocks	: 243	380	455	205
Avg. price 5/	: 164.20	185.00	170-180	240-260

1/ Marketing year beginning September 1 for soybeans, October 1 for soybean oil and meal. 2/ Alternative I assumes relatively favorable production conditions worldwide; Alternative II assumes relatively unfavorable production conditions worldwide. 3/ Quantity needed to balance reported supply with estimated use and ending stocks. 4/ Simple season average of crude soybean oil, Decatur, cents per pound. 5/ Simple season average of 44% protein, Decatur, dollars per short ton.

Table 5.-- SOYBEANS AND PRODUCTS (Metric Measure) 1/

Commodity	: 1977/78	: 1978/79	:	1979/80
	: Prelim.	: Estimated	:	Projected 2/

			Alt. I	Alt. II
SOYBEANS:	:			
Area	:	Million hectares		
Planted	: 23.8	25.9		
Harvested	: 23.3	25.5		
Yield per harv.	:	Metric tons/hectare		
unit	: 2.06	1.96		
	:	Million metric tons		
Beginning stocks	: 2.8	4.4	3.8	3.8
Production	: 48.0	50.2	56.3	49.0
Supply, total	: 50.8	54.5	60.1	52.8
Crushings	: 25.2	27.5	28.8	24.5
Exports	: 19.1	21.8	22.2	22.7
Seed and feed	: 1.9	2.0	2.0	2.0
Residual	: .2	.1	.3	.3
Use, total	: 46.4	51.4	53.3	49.5
Imbalance	: ---	.7 3/	---	---
Ending stocks	: 4.4	3.8	6.8	3.3
Avg. farm price	: 216	248	211-230	294-367
SOYBEAN OIL:	:	Thousand metric tons		
Beginning stocks	: 350	331	426	426
Production	: 4,667	5,017	5,241	4,450
Supply total	: 5,016	5,348	5,668	4,876
Domestic	: 3,753	3,946	4,128	3,810
Exports	: 933	975	862	771
Use, total	: 4,686	4,922	4,990	4,581
Ending stocks	: 331	426	678	295
Avg. price 4/	: 542	595	397-441	661-750
SOYBEAN MEAL:	:	Thousand metric tons		
Beginning stocks	: 207	220	345	345
Production	: 20,295	21,761	22,838	19,391
Supply, total	: 20,501	21,981	23,183	19,736
Domestic	: 14,765	15,876	16,783	14,969
Exports	: 5,516	5,761	5,987	4,581
Use, total	: 20,281	21,636	22,770	19,550
Ending stocks	: 220	345	413	186
Average price 5/	: 204	204	187-198	265-287

 1/ Marketing year beginning September 1 for soybeans, October 1 for soybean oil and meal. 2/ Alternative I assumes relatively favorable production conditions worldwide; Alternative II assumes relatively unfavorable production conditions worldwide. 3/ Quantity needed to balance reported supply with estimated use and ending stocks. 4/ Simple season average of crude soybean oil, Decatur, dollars per metric ton. 5/ Simple season average of 44% protein, Decatur, dollars per metric ton.

The graph displays the price of No. 1 soft white wheat from 1973/74 to 1978/79. The left Y-axis represents the price in cents per lb. (0 to 50), and the right Y-axis represents the price in dollars per metric ton (0 to 1,100). The X-axis shows the years beginning October 1. The monthly average price is shown as a smooth line, and the daily cash high-low price is shown as a line with vertical error bars. The price starts at approximately 20 cents per lb. in 1973/74, peaks at about 43 cents per lb. in early 1974, then declines to a low of about 15 cents per lb. in mid-1975, before rising to a peak of about 32 cents per lb. in early 1977, and ending at about 28 cents per lb. in 1978/79.

Year beginning October 1	Monthly average (¢ per lb.)	Daily cash high-low (¢ per lb.)
1973/74	20	18-22
1974/75	43	35-50
1975/76	15	14-18
1976/77	32	25-35
1977/78	28	20-30
1978/79	28	25-30

Neg. ESCS 2510-79 (4)

The graph displays the price of cotton in the United States from 1973 to 1979. The left y-axis represents the price in dollars per ton, ranging from 0 to 400. The right y-axis represents the price in dollars per metric ton, ranging from 0 to 440. The x-axis shows the years beginning in October, from 1973/74 to 1978/79. Two data series are plotted: 'Daily cash high-low' (a line with vertical error bars) and 'Monthly average' (a smooth line). The price starts around \$150/ton in 1973/74, peaks at \$200/ton in early 1974, drops to a low of \$100/ton in late 1974, then rises to a peak of \$300/ton in late 1976. It then drops sharply to around \$150/ton in early 1977 and remains relatively stable until 1978/79.

Neq. ESCS 2694-79 (4)

Demand for protein meal is likely to continue strong. Soymeal prices in Europe and Japan are attractive relative to grain prices. European Community imports of manioc—an inexpensive low-protein feed—continue large, but use is not expected to increase further this year. World utilization of protein meal is expected to increase but at a slower rate in 1979.

SUNFLOWERSEED

Crush and Exports Heavy

The U.S. sunflowerseed crush during October-March totaled about 200,000 metric tons and produced 78,000 tons of oil. U.S. consumption of sunflowerseed oil is expanding sharply this year as food processors use increasing amounts in cooking oil and margarine. The crush for all of 1978/79 is estimated at 400,000 tons, with 155,000 tons of oil produced.

The bulk of U.S. sunflowerseed production is still exported, with volume this season estimated at 1.3 million tons of seed, or about two-thirds of the total supply of 1.9 million tons. West Europe, East Europe, Mexico, and Venezuela are major importers.

PALM OIL

Imports Smallest in 5 Years

U.S. imports of palm oil, mainly from Malaysia, during October-February totaled 118 million pounds, down 28 percent from 1977/78. It now appears that imports for all of 1978/79 likely will total somewhat below the 362 million pounds brought in last year and sharply below the record 933 million pounds of 1975/76.

Palm oil output is increasing in Malaysia (the world's leading producer-exporter), and world demand is strong. However, palm oil prices, at 31 cents per pound (West Coast), have not been competitive with soybean oil. U.S. palm oil use increases (mainly in hydrogenated shortenings) when prices are at a discount to, or near, domestic soybean oil prices.

COCONUT OIL

Prices Surge

Coconut oil prices (crude, Pacific Coast) have advanced from 32 cents per pound last August to 50 cents in April, an increase of more than 55

percent. In April 1978, prices averaged about 30 cents. The sharp advance in coconut oil prices this season largely reflects reduced output in the Philippines resulting from drought last year. Also, world demand has been strong, with the USSR and Indonesia buying large quantities.

U.S. imports during October-February totaled a half billion pounds or about a fourth more than in the same 1977/78 period. Coconut oil imports for all of 1978/79 probably will decline from the 1.0-billion-pound level of last year, assuming continued high prices and reduced availabilities from the Philippines.

COTTONSEED

Crush Up; Stocks Down

The 1978/79 cottonseed supply of 5.0 million tons is 14 percent less than the previous year.

The season's crush is estimated at 4 million tons, compared with 4.3 million in 1977/78. Larger carryover stocks of seed from last August are helping to maintain crushings. During August-March, about 3.0 million tons had been processed, up from a year earlier. Cottonseed stocks at crushing mills are low totaling only 1.6 million tons on April 1, or a fourth less than on the same date in 1978. This means a shorter crush season for most mills.

Cottonseed prices are higher this season, reflecting the smaller crop and generally higher prices for most other oilseeds. For the season, prices received by farmers averaged \$115 per ton, compared with \$70 in 1977/78. Seed prices this season more than covered farmers' ginning costs, whereas last season they did not.

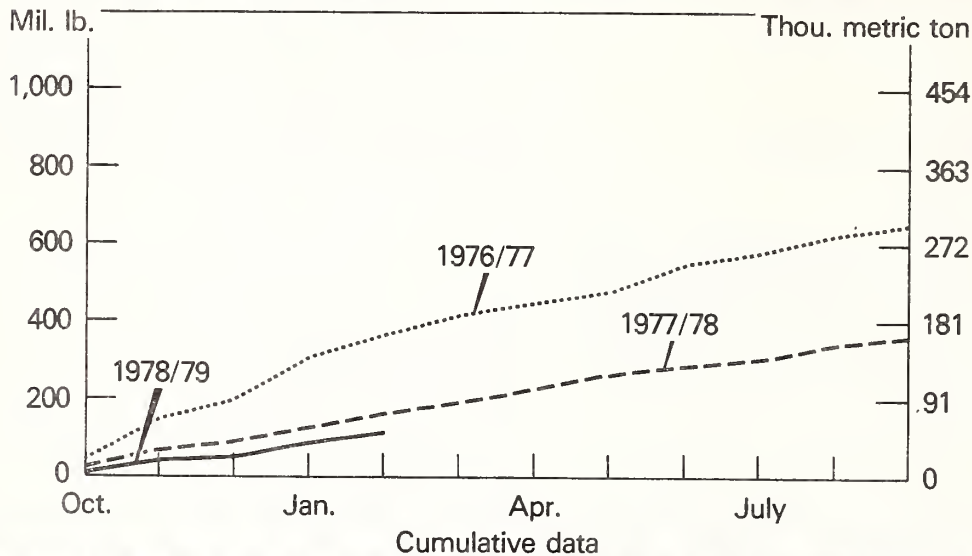
COTTONSEED OIL

Supply Off; Prices Strong

Cottonseed oil supplies for 1978/79 total around 1.4 billion pounds, or about a tenth below last season. Domestic use may fall short of the 700 million pounds of 1977/78. However, increased supplies of competing oils such as soybean and sunflower will provide stiff competition. These oils compete as ingredients in the manufacture of shortening, margarine, and cooking and salad oils.

Cottonseed oil exports are expected to fall below the 700 million pounds of 1977/78. Although world supplies of vegetable oils are larger, U.S. cottonseed oil is preferred in Western Europe, South America, and Egypt, and should remain competitive in these areas.

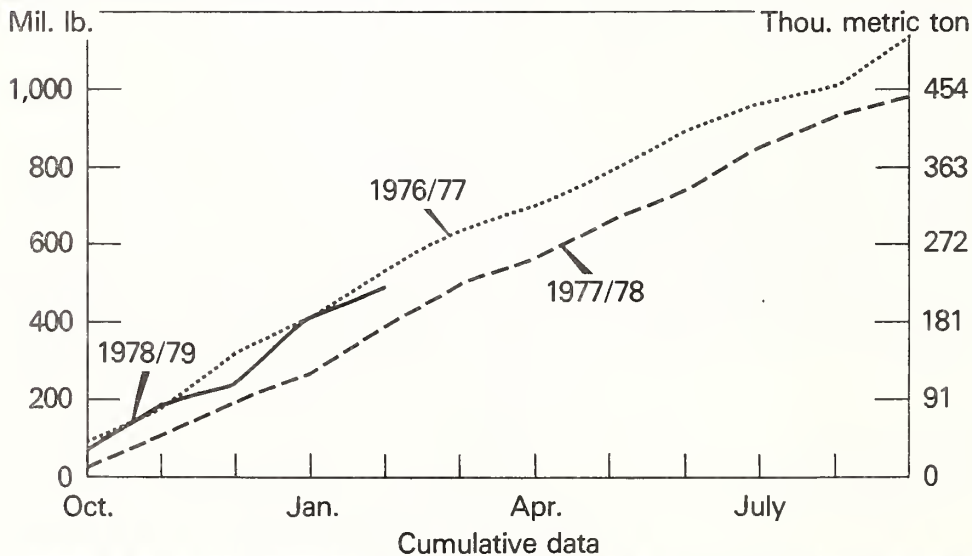
U.S. Palm Oil Imports



USDA

Neg. ESCS 2695-79 (4)

U.S. Coconut Oil Imports



USDA

Neg. ESCS 2725-79 (4)

TABLE 6--FOOD FATS AND OILS: SUPPLY, DISAPPEARANCE, AND PER CAPITA DISAPPEARANCE, 1969-78

ITEM	YEAR BEGINNING OCTOBER									
	1969	1970	1971	1972	1973	1974	1975	1976	1977 1/	1978 2/
-- MILLION POUNDS --										
STOCKS, OCTOBER 1										
BUTTER	155	171	222	178	94	106	40	68	203	217
LARD	56	60	77	44	28	48	23	34	32	35
TALLOW, EDIBLE	26	37	63	36	19	32	24	59	33	42
COCONUT OIL	108	102	108	111	114	122	107	127	137	145
CORN OIL	71	60	58	70	57	68	52	41	46	73
COTTONSEED OIL	377	121	94	114	114	110	136	105	79	85
SOYBEAN OIL	415	543	773	785	516	794	561	1,251	767	729
PALM OIL	28	20	36	93	60	88	127	138	131	74
PALM KERNEL OIL	20	15	26	24	20	26	20	27	46	18
PEANUT OIL	17	12	24	18	18	22	44	199	171	33
SAFFLOWER OIL	61	29	29	39	31	8	25	44	25	21
SUNFLOWER OIL	---	---	---	---	---	---	---	20	---	---
SUB-TOTAL	1,334	1,179	1,510	1,513	1,071	1,422	1,158	2,112	1,670	1,522
FINISHED PRODUCTS 3/	217	236	236	254	206	247	213	271	254	306
TOTAL FOOD FATS AND OILS	1,551	1,407	1,746	1,767	1,277	1,669	1,371	2,383	1,924	1,828
IMPORTS										
BUTTER	2	2	2	2	56	2	2	2	1	1
TALLOW, EDIBLE	4/	4/	4/	1	4/	4/	4/	4/	4/	---
OLIVE OIL	63	67	67	58	49	46	63	56	62	60
COCONUT OIL	562	606	634	687	563	673	1,248	1,115	980	900
CORN OIL	3	1	---	4/	1	---	1	10	3	5
COTTONSEED OIL	4/	4/	---	4/	---	---	4/	---	---	---
PALM OIL	122	207	440	363	349	757	933	661	361	350
PALM KERNEL OIL	80	105	90	102	126	160	158	157	123	135
PEANUT OIL	4/	4/	4/	4/	1	4/	2	4/	4/	---
SESAME OIL	2	2	2	2	3	2	3	3	3	3
SUNFLOWER OIL	---	---	---	---	---	---	---	---	---	---
TOTAL	834	990	1,235	1,214	1,147	1,643	2,413	2,006	1,533	1,454
PRODUCTION										
BUTTER	1,128	1,148	1,121	956	927	995	946	1,078	1,040	925
LARD	1,810	2,018	1,646	1,285	1,324	1,094	982	1,056	999	975
TALLOW, EDIBLE	566	550	523	481	556	557	527	532	795	825
OLEO OIL & STEARINE 5/	11	4	5	8	7	11	7	8	5	5
COCONUT OIL	298	205	336	310	93	---	---	---	---	---
CORN OIL	474	485	499	523	528	465	644	669	695	735
COTTONSEED OIL	1,251	1,235	1,308	1,564	1,552	1,335	920	1,198	1,453	1,250
SOYBEAN OIL	7,904	8,265	7,892	7,501	8,995	7,375	9,630	8,578	10,291	11,060
PEANUT OIL	180	266	265	273	195	236	494	312	140	175
SAFFLOWER OIL (ESTIMATE)	100	120	140	150	100	115	100	75	95	95
SUNFLOWER OIL	---	---	---	---	---	92	110	37	195	330
SUB-TOTAL	13,723	14,297	13,735	13,051	14,278	12,275	14,360	13,542	15,709	16,395
OILSEEDS (OIL EQUIVALENT OF EXPORTS)	5,007	4,857	4,556	5,299	6,221	4,887	6,445	6,453	8,762	9,880
TOTAL SUPPLY	21,114	21,550	21,272	21,332	22,923	20,474	24,587	24,363	27,928	29,557
EXPORTS AND SHIPMENTS										
BUTTER	8	27	124	18	8	4	3	4	2	2
LARD	405	382	220	132	180	147	185	249	174	175
TALLOW, EDIBLE	11	6	5	20	43	17	22	23	18	25
OLEO OIL & STEARINE	11	4	5	8	9	11	7	8	5	5
COCONUT OIL	9	17	20	19	17	14	53	31	33	25
CORN OIL	34	43	49	44	68	84	98	93	116	125
COTTONSEED OIL	454	373	453	584	565	686	500	691	758	600
PALM OIL	8	8	32	40	24	27	39	57	52	50
PEANUT OIL	34	60	71	111	42	104	74	99	75	75
PROCESSED FOOD OILS 6/	63	67	70	67	91	77	101	88	75	75
SAFFLOWER OIL (ESTIMATE)	25	20	40	40	25	25	25	15	25	25
SOYBEAN OIL	1,449	1,782	1,440	1,086	1,461	1,090	1,034	1,608	2,137	2,150
SUNFLOWER OIL	---	---	---	---	---	9	10	31	75	90
SUB-TOTAL	2,512	2,790	2,529	2,171	2,533	2,231	2,181	2,972	3,570	3,422
OILSEEDS (OIL EQUIVALENT)										
COTTONSEED	9	12	1	3	17	2	26	4	15	5
SLYSEANS	4,941	4,764	4,429	5,191	6,100	4,643	6,083	6,126	7,958	8,800
PEANUTS (FOR CRUSHING ABROAD)	12	58	71	56	68	54	---	1	---	---
SAFFLOWER	45	23	55	49	36	38	26	22	28	25
SUNFLOWER SEED	---	---	---	---	---	150	310	300	760	1,050
SUB-TOTAL	5,007	4,857	4,556	5,299	6,221	4,887	6,445	6,453	8,762	9,880
TOTAL EXPORTS	7,519	7,647	7,085	7,470	8,754	7,118	8,626	9,425	13,443	13,302
DOMESTIC DISAPPEARANCE										
BUTTER	1,106	1,074	1,043	1,024	964	1,059	917	941	975	950
LARD	1,425	1,645	1,480	1,185	1,150	989	803	814	822	800
TALLOW, EDIBLE	544	518	546	479	500	548	470	534	769	800
COCONUT OIL	855	644	612	664	539	675	1,175	1,075	939	875
CORN OIL	454	445	439	492	450	399	559	581	556	625
COTTONSEED OIL	1,052	890	834	980	991	622	451	532	689	650
SOYBEAN OIL	6,328	6,253	6,439	6,685	7,255	6,518	7,906	7,454	8,192	8,700
OLIVE OIL	63	67	67	58	49	46	63	56	62	60
PALM OIL	122	182	351	356	294	692	883	611	367	300
PALM KERNEL OIL	85	94	92	107	120	165	151	138	151	135
PEANUT OIL	151	193	200	162	150	175	237	265	179	100
SAFFLOWER OIL (ESTIMATE)	107	100	90	118	98	75	75	74	74	70
SESAME OIL	2	2	2	2	3	2	3	3	3	3
SUNFLOWER OIL	---	---	---	---	---	83	80	26	120	250
PROCESSED FOOD OILS 6/	-63	-67	-70	-67	-91	-77	-101	-88	-75	-75
TOTAL	12,231	12,041	12,124	12,244	12,474	11,970	13,671	13,013	13,824	14,742
TOTAL (CALCULATED NET) 7/	12,211	12,041	12,105	12,292	12,433	12,003	13,614	13,030	13,824	14,742
TOTAL USE FOR FOOD 8/	10,988	11,057	11,312	11,501	11,597	11,340	12,172	11,711	12,500	---
PER CAPITA DISAPPEARANCE										
BUTTER (FAT CONTENT)	4.4	4.2	4.0	3.9	3.7	4.0	3.4	3.5	---	---
MARGARINE (FAT CONTENT)	8.7	8.7	8.9	9.0	9.0	8.8	9.6	9.3	---	---
LARD (OILSEED USE)	4.5	4.6	3.7	3.5	3.2	3.0	2.8	2.3	---	---
BAKING AND FRYING FATS	17.6	17.0	17.3	17.3	17.3	16.6	18.3	17.2	---	---
SALAD AND COOKING OILS	15.0	15.6	16.7	17.4	18.5	17.8	19.5	19.0	---	---
OTHER EDIBLE USES	2.6	2.3	2.7	2.7	2.1	2.0	2.1	1.9	---	---
TOTAL (FAT CONTENT)	52.8	52.5	53.3	53.8	53.9	52.2	55.8	53.3	56.5	56.57

1/ PRELIMINARY. 2/ FORECAST. 3/ SHORTENING, MARGARINE (FAT CONTENT), AND SALAD AND COOKING OILS. 4/ LESS THAN 500,000 POUNDS. 5/ REPRESENTS EXPORTS ONLY; PRODUCTION DATA ARE NOT AVAILABLE. 6/ INCLUDES EXPORTS OF PROCESSED FOOD OILS NOT CLASSIFIED BY KIND, SHORTENING AND OTHER SECONDARY FATS. 7/ ADJUSTED TO REFLECT CHANGES IN STOCKS OF FINISHED PRODUCTS. 8/ EXCLUDES FOOD FATS AND OILS USED FOR NON-FOOD PURPOSES.

Cottonseed oil prices are strong, averaging 30 cents per pound so far this season compared with 22 cents the year before. With smaller production in prospect over the rest of the season, prices likely will continue relatively high.

COTTONSEED MEAL

Feed Use Off

Cottonseed meal production totals an estimated 1.8 million tons in 1978/79, or about a tenth below a year earlier. Domestic feed use is off even with more cattle on feed and favorable feeding ratios.

Cottonseed meal prices (41 percent protein, Memphis) have declined from \$170 per ton in January to \$136 in late April.

LARD

Output To Increase; Prices Strong

Lard production during October-March totaled 504 million pounds, slightly below the level for the same period last season. Hog slaughter was relatively unchanged from a year ago, but declining lard yield per hog held down output. During the second half of the marketing year, hog slaughter is expected to increase, leading to a slight year-to-year increase in lard production, despite continuing declines in average lard yield per hog. Thus, for the season, lard output likely will total about 1 billion pounds, or near the level of 1977/78.

Domestic disappearance likely will total around 800 million pounds, or near the level of last season. Exports (including shipments) probably will fall short of the 200 million pounds of last year.

Lard prices (tanks, loose, Chicago) are strong. Prices increased from 24 cents per pound last October to 27 cents in March. During this period, they averaged 25 cents, compared with 21 cents for the comparable period a year ago. Lard prices reflect the relatively tight lard supply, strong demand, and rising prices for all major food fats due to favorable domestic and foreign demand.

PEANUTS

Crushings, Exports, and Edible Uses Up

The 1978 peanut crop totaled 4.0 billion pounds, about 7 percent above the previous year. Increased production in the Virginia-North Carolina region and in the Southeast more than offset smaller production in the Southwest. Peanut supplies for the 1978/79 season total 4½ billion pounds, about 6 percent above the previous season.

Use of peanuts has increased this year in all major outlets, with edible use so far up about 6 percent. Use is up in peanut candy, salted peanuts, and peanut butter, but down in peanut butter sandwiches. For the entire season, use in all edible products likely will total about 1.9 billion pounds (farmers' stock basis), 3 percent or so above last year.

Peanut crushings through February totaled 247 million pounds (farmers' stock basis), about 9 percent above the same period last season. Crushings got off to a slow start but picked up since fall. It now appears that crushings for the entire season may slightly exceed the 500 million pounds crushed last season.

Brisk foreign demand is bolstering exports. For the season, exports are expected to total near the record 1 billion pounds of last year.

On February 15, the Secretary of Agriculture announced a national average support level of \$420 per short ton for 1979-crop quota peanuts and \$300 per short ton for 1979-crop additional peanuts. The quota support level, unchanged from 1978, is the legal minimum. The additional support level is based on estimated export demand and prices and is \$50 per ton above the 1978 level of \$250 per ton.

FLAXSEED

Crushings Above Year Ago; Exports Off

Flaxseed crushings during the June 1978-March 1979 period totaled 10 million bushels, about 1½ million bushels above the same period a year ago. However, the smaller supplies this year will tend to limit crushings. For the entire season, crushings likely will total about 11½ million bushels, or near the level of last season.

Flaxseed exports are off sharply. For the entire season, they may total about 100,000 bushels, compared with 1 million bushels for the last marketing season. Imports, however, will total about 1½ million bushels, up from the 900,000 bushels during 1977/78.

Flaxseed prices received by farmers are strong. Tight flaxseed supplies and good crushing demand are propping up prices. From a seasonal low of \$4.75 per bushel last July, prices rose to a high of nearly \$7 in April.

Flaxseed product prices also are higher. Linseed oil prices (raw, Minneapolis) strengthened from 22 cents last summer to 30 cents in April. Linseed meal prices (34 percent protein, bulk, Minneapolis) hit a seasonal peak of \$159 per ton last December and have declined since.

Domestic disappearance of linseed oil is estimated at 185 million pounds, down from 225

million in 1977/78. Exports likely will total around 65 million pounds, up from 25 million.

TALLOW

Production May Approximate Last Year's

Production of edible and inedible tallow and grease in 1978/79 likely will be near the 6.7 billion pounds of the previous marketing year. Although cattle slaughter will be down, heavier slaughter weights are expected to prevent any reduction in

tallow output. Also, hog slaughter will be up from year-ago levels. Domestic disappearance is estimated at about 4 billion pounds and exports at about 2.8 billion, not much different from the levels of last season.

Inedible tallow prices (bleachable fancy, Chicago) rose from 20 cents per pound last December to 26 cents in April. So far this season they have averaged 24 cents per pound, compared with 17 cents for the same period last year. Prices are expected to remain high and, for the season, should average well above the 18 cents of 1977/78.

PUBLICATIONS AVAILABLE ON FATS AND OILS

A copy of the following releases may be obtained from USDA, ESCS, Room 212, GHI Building, 500 12th St., S.W., Washington, D.C. 20250:

"Market Situation for Oils and Fats and the Fatty Acid Industry," a speech by George W. Kromer (202-447-8444) before the Pulp Chemicals Association Annual Meeting, San Diego, California, March 30, 1978.

"World Fats and Oils Situation and U.S. Tallow Prospects," a speech by George W. Kromer before the National Renderers Association Annual Meeting, Houston, Texas, October 31, 1978.

"U.S. Oilseeds and Products Outlook," a speech by George W. Kromer at the National Agricultural Outlook Conference, Washington, D.C., November 14, 1978.

"The United States Soybean Industry and Its Role in World Markets," a speech by Stanley A. Gazelle (202-447-8444) before the World Soybean Research Conference—II, Raleigh, North Carolina, March 27, 1979.

"Competitive Position of New Oilseed Sunflowers with Soybeans," a speech by Harry O. Doty, Jr. (202-447-8444) before the World Soybean Research Conference—II, Raleigh, North Carolina, March 28, 1979.

Also available is "Selected Oilseeds Marketing Topics" which includes reprints of selected special articles that appeared in the *Fats and Oils Situation* during 1978.

THE VULNERABILITY OF SOYBEAN AND PRODUCT MARKETS TO KEY SUPPLY AND DEMAND VARIABLES

By William H. Meyers and Duane D. Hacklander*

ABSTRACT: An econometric model of the soybean industry is used to examine the impacts of changes in key supply and demand variables on prices and utilization levels of soybeans and its products.

KEYWORDS Impact multipliers, soybeans, soybean oil and meal, soybean model.

High price variability has been an important feature of soybean and soybean product markets ever since the 1972/73 crop year. However, the pattern of variation has been different in the three markets of the soybean industry. In terms of average annual wholesale prices, soybeans reached a peak in 1976/77, soybean meal in 1972/73, and soybean oil in 1973/74.

An analysis of price variability in this industry is complex because of the joint product relationship of meal and oil to soybeans. Likewise, the high degree of interaction among these three markets complicates the analysis of supply and demand shocks that occur in any one of the markets.

The analysis of complex relationships can often be done more effectively with the aid of statistical models. A model does not replace the analyst but rather is used as a tool in understanding the systematic components of market behavior. An econometric model of the soybean industry is the analytical tool used in this paper.

The research on this model has built upon previous work by Houck and Mann (2)¹, Houck, Ryan, and Subotnik (3), Matthews, Womack, and Hoffman (4), Golden (1), and other unpublished work in the USDA. The result is a supply and demand model of soybean and soybean product markets with 16 simultaneous relationships.²

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¹Numbers in parentheses refer to references listed at the end of article.

²A description of these equations can be obtained from the authors.

The impact multipliers presented are derived from soybean model solutions. The model is solved for the equilibrium levels of the endogenous prices and quantities given a base set of data for the predetermined supply and demand variables.³ Each of the key predetermined variables is changed one at a time and new solutions are obtained. The impact multiplier for an endogenous variable is the difference between the equilibrium level in the new solution and that in the base solution. The model is linear in all endogenous variables, so most impacts can be used in multiples of what is presented here. Multiple effects can be analyzed by adding or subtracting separate impacts.

Several key domestic and foreign shift variables were selected in order to examine shocks that originate in different components of the model. These exogenous variables are the soybean crop yield, U.S. corn price, high protein animal units, competing oil consumption, Brazilian soybean and meal exports, and the value of the U.S. dollar. The impact analyses are summarized in the table and are discussed below.

Soybean crop yield—Production estimates are subject to change several times after acreage is known, and it is important to know how these changes affect equilibrium levels. The yield per harvested acre is exogenous to this model, so a change in yield is used to analyze the impact of a 100-million-bushel production change.

³Predetermined variables are the inputs required for a model solution, and endogenous variables are the output generated by the model.

Table 7'--Selected reduced-form impact multipliers from the soybean model

Sector	Component	Unit	Soybean : : production : : + 100 : : Mil. bu. :	Corn price : + \$.10/bu. : t : t + 1 : : t : t + 1 :	High protein: Competing : : Animal : : Units : : + 10% :	% oil con- : : sumption + : : 100 Mil.lbs.: -1 MMT : -1 MMT :	Brazil : : exports : : Beans : Meal : : MMT : -1 MMT :	Devaluation (SDR) : +10% :
Soybeans	Supply	Mil. bu.	100	0	-23	0	0	0
	Crush	"	28	-2	-6	-2.1	-12	-18
	Export	"	27	3.6	-6	-0.6	25	43
	Stocks	"	45	-3.4	-10	2.7	-13	-25
	Price (Decatur)	\$/bu.	-63	.10	.15	-0.6	.28	.52
Meal	Planted Acres	Mil. acre	-2.8	-0.7	0.1	3.1	1.2	2.3
	Supply	1,000 S.T.	658	-6	-150	-50	-285	-435
	Domestic	"	404	32	-92	-31	-175	-396
	Export	"	254	-38	-59	-19	-110	-39
	Price (Decatur)	\$/S.T.	-16.6	4.4	3.8	55.9	7.2	16.3
Oil	Supply	Mil. lb.	299	-3	-60	-23	-130	-198
	Domestic	"	26	-2	-6	-106	-12	-18
	Export	"	134	-10	-32	66	-56	-80
	Stocks	"	139	9	-21	17	-61	-100
	Price (Decatur)	¢/lb.	-2.0	0.2	0.5	-2.9	0.9	1.4
Margin		\$/bu.	0.1	.02	*	.32	*	.06

* Absolute value less than .002

The model indicates that such an increase in production would raise soybean crush, exports, and stocks by 28, 27, and 45 million bushels, respectively. The Decatur bean price would fall by \$0.63 per bushel, and the processing margin would increase only slightly.

The increase in crush raises meal and oil production proportionately, and the prices of meal and oil fall by \$16.60 per short ton and 2.0 cents per pound, respectively. In the meal sector, about 60 percent of the additional production goes into domestic use. Because of the inelastic nature of domestic demand for oil, most of the new oil supply goes into exports and stocks.

Corn price—The price of corn affects soybean acreage as well as several of the demand components. Because of its direct effect on production, the corn price impacts for both the current (t) and next year (t+1) are presented.

In the first year, (t), a rise in the corn price increases bean exports and domestic meal use and causes a net reduction in the exports of meal. The prices of soybeans, meal, and oil rise by \$0.10 per bushel, \$4.40 per ton, and 0.2 cents per pound, respectively.

In spite of the higher soybean price, the soybean to corn price ratio declines. The net effect on the supply side is to reduce soybean acreage planted by about 0.7 million acres and carryover stocks by 3.4 million bushels. Thus, supply for the following year is reduced by 23 million bushels and the soybean price rises \$0.15 per bushel above the base level. The decline in crushing (6 million bushels) in the second year reduces supplies of meal and oil and causes these prices to rise by \$3.80 per ton and 0.5 cents per pound, respectively.

High-protein animal units—A domestic factor of particular interest this year is the high-protein animal unit index which may increase by about 5 percent between calendar years 1978 and 1979. An increase of 10 percent in this index increases domestic meal demand by about 1.5 million tons and meal price by nearly \$56 per ton. The margin increases by \$0.32 per bushel, which drives up crush and export demand by 26 and 8 million bushels, respectively. The price of soybeans rises by \$0.71 per bushel, and larger oil supplies drive down the oil price by 2.9 cents per pound.

Competing oil consumption—The substitutability among food oils is high. An increase of 100 million pounds in competing oil consumption would reduce domestic use of soybean oil by a like amount. At the same time, decreased domestic use would cause the soybean oil price to decline, which would increase the demand for soybean oil exports

and raise stocks. Crush would decline as a result of lower oil demand, but the decline would be tempered by an increase in meal price.

The net result is a 2-million-bushel reduction in crush and a corresponding decline in meal and oil supplies. The impact on soybean price is a decline of \$0.06 per bushel.

Brazilian bean and meal exports—For the last 2 years, soybean crop conditions in Brazil have had a major impact on prices in the U.S. soybean industry. When production shortfalls occur, Brazil tries to maintain crushings and meal exports by cutting back on bean exports.

The model indicates that a 1-million-metric-ton decline (37 million bushels) in bean exports from Brazil increases U.S. exports by 25 million bushels. This is less than a 1 to 1 substitution due to higher equilibrium price levels. The increased export levels are drawn from stocks (13 million bushels) and crush (12 million bushels). At the same time, the Decatur price of soybeans rises by \$0.28 per bushel. The decline in crush reduces meal production by 285,000 tons and causes the meal price to increase by \$7.20 per ton. Oil production is reduced proportionately, and the price rises by 0.9 cents per pound. No significant change in the crushing margin is indicated.

If Brazil were to cut meal exports by 1 million tons, the impact on meal price would be greater (\$10.40/ton) and on bean price less (\$0.13/bu.). Bean exports also rise in this case due to higher crushing margins (\$0.06/bu.). Oil price falls due to the increase in crush.

Dollar devaluation—Another factor which has been suggested as a cause for rising export levels this year is the declining value of the dollar relative to foreign currencies. The model uses the dollar value of SDR's (a measure of dollar strength) as a proxy for exchange rate effects on soybean exports. An increase in this variable reflects a dollar devaluation and increases foreign demand for both beans and meal.

A change equivalent to a 10-percent devaluation increases the export estimate by 43 million bushels. Of this, 18 million is drawn from crush and 25 million from stocks. The price of soybeans rises by \$0.52 per bushel and the prices of meal and oil by \$16.30 per ton and 1.4 cents per pound, respectively.

Although the initial impact is to increase foreign demand for meal, the net result is a decline in meal exports due to lower crush and higher prices. However, total bean and meal exports in meal equivalents rise by about 980,000 tons.

Summary and Implications

These analyses represent only a few of the key factors that influence soybean and soybean product markets. The impacts generated by the model are based on historical relationships that are incorporated in the model structure. Unless the structure of these markets has changed significantly, these impacts should provide reasonable measures of market response to external shocks.

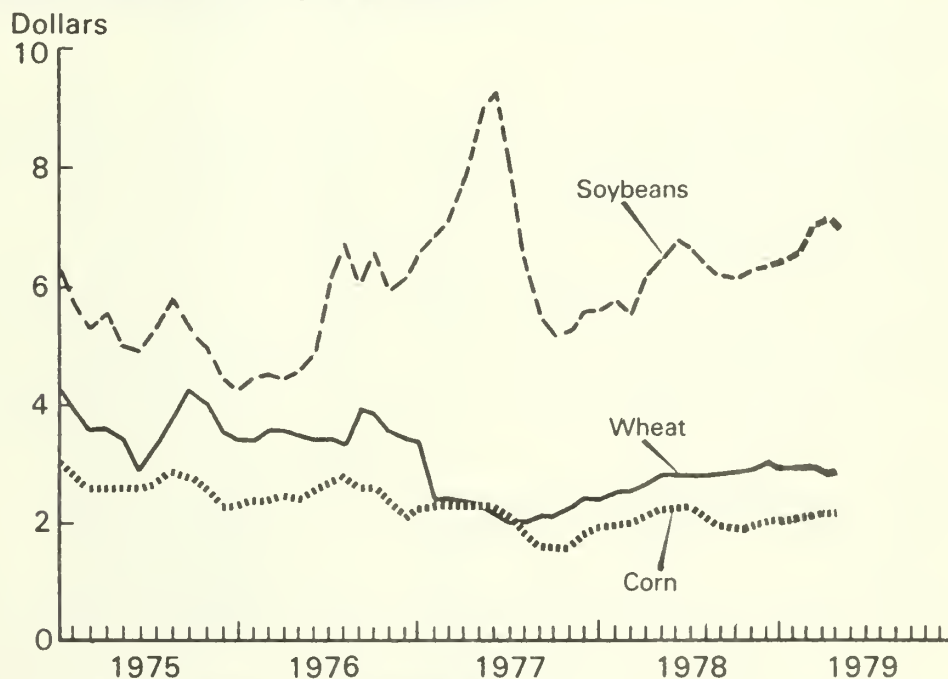
Similar reduced-form impacts can be generated for any of the predetermined variables in the model. Tables of such impact multipliers are convenient tools for policy and price analysis. They should be used in combination with the analyst's good judgment and other relevant information.

References

- (1) Golden, R., "The Demand and Price Structure for Oil and Meal," Proceedings of World Soybean Research Conference, 1975, published in 1976.
- (2) Houck, J. P. and J. S. Mann, *An Analysis of Domestic and Foreign Demand for U.S. Soybeans and Soybean Products*, Minn. Agr. Exp. Sta. Tech. Bul. 256, 1968.
- (3) Houck, J. P., Ryan, Mary, and A. Subotnik, *Soybeans and Their Products, Market, Models, and Policy*, Univ. of Minn. Press, 1972.
- (4) Matthews, J., Womack, A., and R. Hoffman, "Formulation of Market Forecasts for the U.S. Soybean Economy with an Econometric Model," *Fats and Oils Situation*-260, 1971.

* * * * *

Prices Received by Farmers



USDA

Neg ESCS 3212-79(12)

TABLE 81--WHOLESALE AND RETAIL PRICES PER POUND FOR FATS AND OILS, BY MONTHS

ITEM	1978				1979	
	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY
	CENTS					
WHOLESALE						
BUTTER, CREAMERY, GRADE A, (92- AND 93-SCORE) BULK, NEW YORK	122.5	123.0	128.7	129.4	128.7	116.1
BUTTER, CREAMERY, GRADE A, (92-SCORE) BULK, CHICAGO	106.7	106.7	120.9	119.1	111.3	111.3
CASOR DIL, NO.1, BRAZILIAN, TANKS, IMPORTED, NEW YORK	37.9	37.9	37.9	37.9	37.9	37.9
COCONUT OIL, CRUDE, TANK CARS, PACIFIC COAST 1/	39.2	41.6	42.6	42.6	46.3	47.2
COCONUT OIL, CRUDE, TANKS, F.O.B., NEW YORK	39.5	42.7	44.4	43.6	47.1	47.5
COD DIL, BULK, F.O.B., GLOUCESTER, MASSACHUSETTS	23.5	23.5	23.5	23.5	23.5	23.5
CODLIVER OIL, NF, DRUMS, NEW YORK	69.0	69.0	69.0	69.0	69.0	69.0
CORN OIL, CRUDE, TANK CARS, F.O.B., DECATUR	35.5	34.0	35.0	31.0	35.0	34.0
CORN OIL, REFINED, TANKS, NEW YORK	44.4	41.9	42.3	---	39.8	38.9
COTTONSEED OIL, CRUDE, TANK CARS, F.O.B., SOUTHEAST MILLS	34.0	28.5	27.3	27.5	27.3	32.0
COTTONSEED OIL, CRUDE, TANK CARS, F.O.B., VALLEY	33.3	29.3	28.2	28.2	28.1	32.1
COTTONSEED OIL, REFINED, TANKS, NEW YORK	39.5	34.6	33.7	34.1	33.9	37.5
DEGRAS, LINCOLN TECHNICAL, DRUMS, NEW YORK	64.0	64.0	64.0	64.0	64.0	64.0
FISH OIL, REFINED, ALKALI, TANKS, NEW YORK	27.0	27.0	27.0	27.0	27.0	27.0
GLYCERINE, SYNTHETIC, REFINED, 99.5 PERCENT, TANKS, DELIVERED, NEW YORK	51.0	51.0	50.3	50.3	50.0	49.9
GLYCERINE, NATURAL, REFINED, U.S.P., 99 PERCENT, TANKS, DELIVERED, NEW YORK	49.3	47.6	48.5	48.5	48.5	48.6
GREASE, A WHITE, TANK CARS, DELIVERED, CHICAGO	21.0	20.5	22.4	19.4	22.4	21.6
GREASE, B WHITE, DELIVERED, CHICAGO	17.8	18.5	18.9	18.6	19.4	19.3
GREASE, YELLOW, DELIVERED, CHICAGO	16.3	16.8	18.1	17.5	18.1	18.6
GREASE, WHITE, CHOICE, TANKS, NEW YORK	20.3	21.0	22.2	19.8	20.5	21.4
LARD OIL, EXTRA NO. 1, DRUMS, CHICAGO	---	---	---	27.0	27.0	27.0
LARD, LOOSE, TANK CARS, CHICAGO	26.0	24.5	24.5	23.3	24.5	24.0
LARD, PRIME STEAM, TIERCES, CHICAGO	25.2	24.6	24.1	23.3	24.5	24.7
LARD, REFINED, 1 AND 2-POUND PRINTS, CHICAGO	38.5	37.0	39.5	37.3	39.5	38.8
LECITHIN, EDIBLE, TECHNICAL, BLEACHED, DRUMS, WORKS	29.5	29.5	29.5	29.5	29.5	29.5
LINSEED OIL, RAW, TANK CARS, MINNEAPOLIS	24.0	24.0	24.0	24.0	24.0	25.2
LINSEED OIL, RAW, TANKS, NEW YORK	26.5	26.5	26.5	26.5	26.5	26.5
MARGARINE, COLORED, DELIVERED, EASTERN UNITED STATES	52.3	52.1	53.3	52.8	53.3	52.3
MARGARINE, YELLOW, QUARTERS, F.O.B., CHICAGO	41.6	41.3	40.1	39.6	40.3	41.3
MARGARINE, WHITE, DOMESTIC VEGETABLE, CHICAGO	48.2	47.8	48.4	46.5	48.4	49.7
MENHADEN OIL, CRUDE, TANKS, F.O.B., BALTIMORE	15.0	15.0	15.0	15.0	15.0	15.0
MENHADEN OIL, LIGHT PRESSED, TANKS, NEW YORK	---	---	---	---	---	---
MITICICA OIL, DRUMS, F.O.B., NEW YORK	69.0	69.0	69.0	69.0	61.8	56.0
MITICICA OIL, TANKS, NEW YORK	76.5	76.5	76.5	76.5	67.5	60.5
OLIVE OIL, IMPORTED, EDIBLE, DRUMS, NEW YORK	83.3	83.3	83.3	83.3	83.3	83.3
PALM KERNEL OIL, CIF, BULK, U.S. PORTS	36.9	36.9	36.9	---	---	---
PALM OIL, CIF, BULK, U.S. PORTS	29.8	30.5	30.4	31.0	31.7	32.8
PEANUT OIL, CRUDE, TANK CARS, F.O.B., SOUTHEAST MILLS	42.7	45.1	49.7	46.0	51.0	38.0
PEANUT OIL, REFINED, TANKS, NEW YORK	48.6	51.6	56.0	52.9	51.5	47.4
PEASEED OIL, REFINED, DENATURED, TANKS, NEW YORK	39.0	39.0	39.0	---	---	---
SAFFLOWER OIL, TANKS, NEW YORK	41.0	41.0	41.0	41.0	41.0	41.0
SAFFLOWER OIL, EDIBLE, DRUMS, NEW YORK	52.0	52.0	52.0	52.0	52.0	52.0
SESAME OIL, REFINED, DRUMS, NEW YORK	87.5	87.5	87.5	87.5	126.0	123.0
SHORTENING, ALL VEGETABLE, HYDROGENATED, 440-POUND DRUMS, NEW YORK	43.3	42.0	40.0	41.3	40.0	43.8
SOYBEAN OIL, CRUDE, TANK CARS, F.O.B., DECATUR	27.8	26.7	23.7	25.8	25.8	27.3
SOYBEAN OIL, REFINED, TANKS, NEW YORK	32.7	32.1	33.5	33.0	30.8	32.7
TALL OIL, CRUDE, TANKS, WORKS	7.5	7.5	7.5	7.5	7.8	7.8
TALLOW, EDIBLE, LOOSE, CHICAGO	24.5	25.0	24.5	23.8	24.5	23.5
TALLOW, INEDIBLE, PACKERS' PRIME, C.A.F., DELIVERED, CHICAGO	19.5	19.8	20.1	20.8	21.9	21.8
TALLOW, INEDIBLE, BLEACHABLE FANCY, DELIVERED, CHICAGO	20.9	22.0	22.2	20.3	21.7	22.7
TALLOW, INEDIBLE, NO. 1, DELIVERED, CHICAGO	16.3	17.2	18.1	17.5	---	---
TUNG OIL, IMPORTED, DRUMS, F.O.B., NEW YORK	87.5	87.5	68.5	66.4	68.9	68.9
TUNG OIL, IMPORTED, TANKS, NEW YORK	118.5	118.5	118.5	118.5	118.5	116.5
RETAIL 2/						
BUTTER	---	---	---	---	---	---
COOKING AND SALAD OILS	---	---	---	---	---	---
MARGARINE	---	---	---	---	---	---
PEANUT BUTTER	---	---	---	---	---	---
SALAD DRESSING (ITALIAN)	---	---	---	---	---	---
SHORTENING	---	---	---	---	---	---

1/ INCLUDES 1 CENT IMPORT DUTY.

2/ LEADING CITIES.

TABLE 9.---INDEX NUMBERS OF WHOLESALE PRICES OF FATS AND OILS, BY MONTHS, 1967 = 100

ITEM	1978										1979	
	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY			
WHOLESALE												
ALL FATS AND OILS	285	295	287	321	309	310	298	299	311			
ALL FATS AND OILS, EXCEPT BUTTER	332	344	331	374	358	359	343	299	311			
GROUP BY ORIGIN:												
ANIMAL FATS	240	249	241	272	262	267	253	252	379			
VEGETABLE OILS, DOMESTIC	209	213	211	224	214	198	204	207	221			
VEGETABLE OILS, FOREIGN	248	263	259	305	313	328	314	343	394			
GROUP BY USE:												
BUTTER	160	160	176	175	176	184	184	191	227			
LARD	288	296	286	333	314	314	298	301	307			
LARD, REFINED	236	239	258	283	272	291	274	278	285			
FOOD FATS OTHER THAN BUTTER	225	231	224	257	243	239	231	294	301			
FOOD FATS OTHER THAN BUTTER AND LARD	226	231	228	249	239	225	229	165	159			
ALL EDIBLE FATS AND OILS	225	211	207	233	223	221	214	215	220			
SOAP FATS	321	345	320	348	349	373	342	345	379			
DRYING OILS	180	165	185	185	184	180	181	191	227			
OTHER INDUSTRIAL	275	282	275	---	---	---	---	---	---			
ALL INDUSTRIAL	297	313	298	320	321	340	315	318	348			
CRUDE	220	225	222	243	233	219	223	229	242			
EDIBLE VEGETABLE OILS, GROUPED BY DEGREE OF PROCESSING:												
END PRODUCTS	225	226	227	253	232	232	223	225	241			
REFINED	218	218	209	213	212	212	212	211	214			
MARGARINE	215	215	205	204	203	208	206	204	204			
SHORTENING, 3-POUND TIN	233	233	233	233	233	233	233	233	233			
SHORTENING, 440-POUND DRUM	204	202	196	208	202	193	199	199	211			
RETAIL 1/												
EDIBLE FATS AND OILS	214	---	---	---	---	---	---	---	---			
MARGARINE	235	---	---	---	---	---	---	---	---			
SALAD DRESSING, ITALIAN STYLE	176	---	---	---	---	---	---	---	---			
SALAD AND COOKING OIL	230	---	---	---	---	---	---	---	---			

1/ CRI SEASONALLY ADJUSTED SERIES.

SOURCE: ALL INDEXES EXCEPT "OTHER INDUSTRIAL" FROM BUREAU OF LABOR STATISTICS.

TABLE 10.--PRICES RECEIVED BY FARMERS AND PRICES AT TERMINAL MARKETS FOR SPECIFIED OIL-BEARING MATERIALS AND OILMEALS, BY MONTHS

ITEM	UNIT	1978					
		SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY
OILSEEDS							
COTTONSEED, UNITED STATES AVERAGE	SHORT TON	94.40	110.00	113.00	115.00	121.00	120.00
FLAXSEED, NC. 1, MINNEAPOLIS	BUSHEL	5.76	5.70	5.49	5.75	6.17	6.63
FLAXSEED, UNITED STATES AVERAGE	BUSHEL	5.27	5.13	5.48	5.26	5.64	6.00
PEANUTS, UNITED STATES AVERAGE (FARMERS' STOCK)	100 LB.	21.20	21.50	21.10	21.10	20.30	---
PEANUTS, VIRGINIA NO. 1, SHELLED, VIRGINIA-NORTH CAROLINA 1/	100 LB.	32.00	31.88	31.80	31.83	32.12	31.83
PEANUTS, RUNNERS NO. 1, SHELLED, SOUTHEAST 1/	100 LB.	---	---	32.17	---	---	---
PEANUTS, SPANISH NO. 1, SHELLED, SOUTHWEST 1/	100 LB.	38.50	38.50	38.50	38.50	38.50	38.50
SOYBEANS, NC. 1, YELLOW, CHICAGO	BUSHEL	6.47	6.76	6.66	6.79	6.85	7.28
SOYBEANS, NC. 1, YELLOW, ILLINOIS COUNTRY SHIPPING POINTS	BUSHEL	6.42	6.72	6.68	6.81	6.89	7.28
SOYBEANS, UNITED STATES AVERAGE	BUSHEL	6.19	6.26	6.39	6.49	6.58	6.99
OILMEALS (BULK)							
COTTONSEED MEAL, 41 PERCENT PROTEIN, MEMPHIS	SHORT TON	162.00	164.00	166.25	167.50	169.50	161.90
COTTONSEED MEAL, 41 PERCENT PROTEIN, ATLANTA	SHORT TON	178.25	176.60	181.40	183.90	189.20	178.50
COTTONSEED MEAL, 41 PERCENT PROTEIN, FORT WORTH	SHORT TON	160.00	173.00	184.40	178.10	182.10	178.20
FISH MEAL, 65 PERCENT PROTEIN, BAGGED, EAST COAST	SHORT TON	---	370.00	388.75	395.00	392.00	387.50
FISH MEAL, 65 PERCENT PROTEIN, BULK, LOS ANGELES	SHORT TON	---	---	---	367.25	---	---
LINSEED MEAL, 34 PERCENT PROTEIN, MINNEAPOLIS	SHORT TON	136.25	148.20	155.50	158.75	153.00	148.50
PEANUT MEAL, 50 PERCENT PROTEIN, F.C.B., SOUTHEASTERN MILLS	SHORT TON	160.00	---	---	---	197.50	185.60
SAFFLOWER MEAL, 20 PERCENT PROTEIN, SAN FRANCISCO	SHORT TON	66.25	75.40	88.00	92.50	93.00	91.00
SOYBEAN MEAL, 44 PERCENT PROTEIN, CHICAGO	SHORT TON	175.40	188.70	188.70	200.40	196.50	202.40
SOYBEAN MEAL, 44 PERCENT PROTEIN, DECATUR	SHORT TON	163.90	176.80	177.10	188.75	184.90	190.90
SOYBEAN MEAL, 44 PERCENT PROTEIN, ATLANTA	SHORT TON	179.70	191.60	188.80	202.20	199.50	207.00
SOYBEAN MEAL, 44 PERCENT PROTEIN, MEMPHIS	SHORT TON	172.50	188.60	182.90	194.40	191.40	198.00
SOYBEAN MEAL, 45-50 PERCENT PROTEIN, DECATUR	SHORT TON	178.25	191.70	189.50	204.50	200.60	206.60
SOYBEAN MEAL, 45-50 PERCENT PROTEIN, MEMPHIS	SHORT TON	188.70	203.00	200.10	215.70	211.50	217.25
SOYBEAN MEAL, 45-50 PERCENT PROTEIN, ATLANTA	SHORT TON	194.20	205.20	204.30	217.20	214.50	222.00
OTHER FEEDS							
CORN GLUTEN MEAL, 60 PERCENT PROTEIN, CHICAGO	SHORT TON	232.75	249.20	243.75	243.75	252.60	271.90
MEAT AND BONE MEAL, 50 PERCENT PROTEIN, CHICAGO	SHORT TON	211.25	229.00	223.75	223.10	225.00	266.90
UREA, 45 PERCENT N., FEED GRADE, BULK, OLVO EAST	SHORT TON	167.50	167.50	167.50	167.50	167.50	167.50

1/ THIS PRICE APPLIES TO PEANUTS FOR EDIBLE USES.

SOURCES: COMPILED FROM CHEMICAL MARKET REPORTER, WALL STREET JOURNAL, FEEDSTUFFS, REPORTS OF THE STATISTICAL REPORTING SERVICE, AND AGRICULTURAL MARKETING SERVICE.

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